UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,875	03/22/2004	Alexander I. Yatskov	021944.116US	9876

26720 7590 07/16/2008

LOCKE LORD BISSELL & LIDDELL LLP
ATTN: IP DOCKETING
600 TRAVIS STREET
3400 CHASE TOWER
HOUSTON, TX 77002

EXAMINER	
PAPE, ZACHARY	

ART UNIT	PAPER NUMBER
2835	

MAIL DATE	DELIVERY MODE
07/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/805,875	YATSKOV ET AL.	
	Examiner	Art Unit	
	Zachary M. Pape	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,7-13,19,22-24,26-29,31-40,42,43,51-53,57-61 and 72-84* is/are pending in the application.

4a) Of the above claim(s) *35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,7-13,19,22-24,26-29,31-40,42,43,51-53,57-61 and 72-84* is/are rejected.

7)☒ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The following detailed action is in response to the correspondence filed 5/30/2008.

Claim Objections

The objections to claims 26 and 72 have been overcome by the present amendment and are therefore withdrawn.

Claim 80 is objected to since it depends from itself. For the purposes of examination, the claim has been considered to depend from claim 79. Additionally, claims 81-84 all depend from claim 80.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,7,12,13,19,26,28,29,32,33,36-40,43,57,60,61,74-75,77-80-84 are rejected under 35 U.S.C. 102(b) as being anticipated by Miller et al. (US 6,305,180 – hereinafter, "Miller").

With respect to claim 1, Miller teaches a computer system comprising: a chassis (Generally depicted in Fig 2a) having an air inlet and an air outlet; an air mover (6) disposed within the chassis and associated with either the air inlet or the air outlet and

establishing a forced air flow path within the chassis; a first computer module compartment (Between respective element 1b) positioned in the chassis and in the forced air flow path so that heat from the first compartment may be transferred to the forced air flow; a first air-to-fluid heat exchanger (1b) having at least one internal fluid passage (Pipes P) configured to carry a working fluid, and a plurality of heat transfer surfaces (Surfaces of Pipes P) therein, and positioned in the chassis between the air inlet (adjacent the first heat exchanger 1b) and the first compartment in the forced air flow path such that the forced air flows through the heat exchanger and across the heat transfer surfaces and thereby removes a portion of the heat from the air (See Fig 2c which shows cooled air entering the flow path after the first exchanger); a second computer module compartment (Between respective element 1b) positioned in the chassis and in the forced air flow path; a second air-to-fluid heat exchanger (1b) having at least one internal fluid passage (Pipes P) configured to carry the working fluid, and a plurality of heat transfer surfaces (Surfaces of Pipes P, Column 9, Lines 13-19) therein, and positioned in the chassis between the first and second compartments in the forced air flow path such that the forced air flows through the second heat exchanger and across the heat transfer surfaces and thereby removes a portion of the heat from the air (See Fig 2a, see also Column 9, Lines 13-33; also see POA Figs 1 and 2 below), a heat exchanger (43) external to and spaced apart from the chassis and adapted to remove heat from the working fluid; and a controller (45) configured to control the pressure or temperature of the working fluid supplied to the first and second heat exchangers.

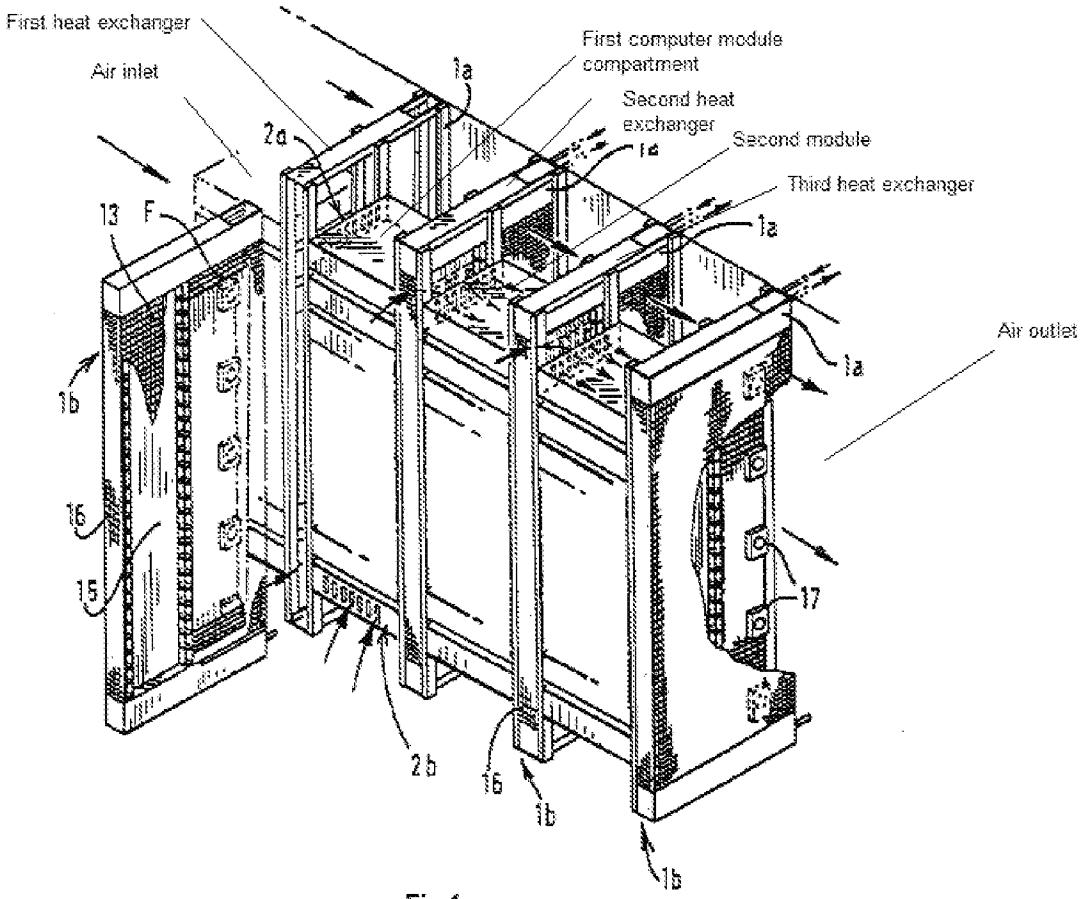

Fig 1

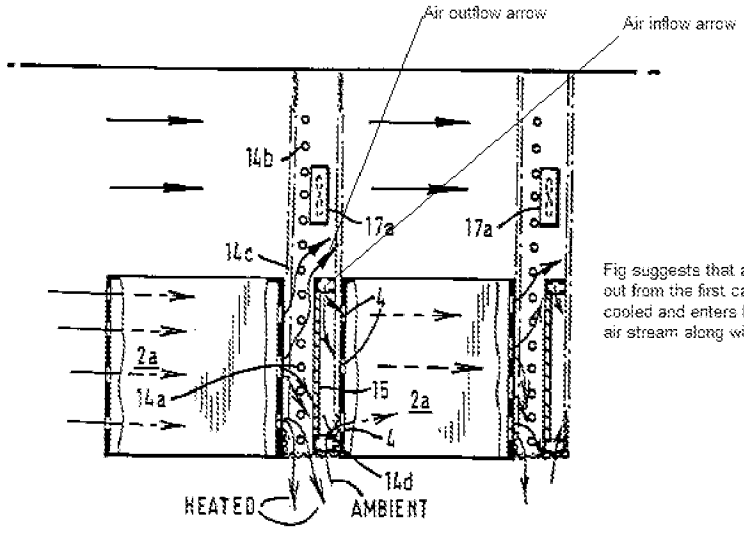

Fig suggests that air which flows out from the first cabinet, is then cooled and enters back into the air stream along with ambient air

FIG. 2

With respect to claim 26, Miller further teaches (In Figs 2a and 5) a system comprising: a chassis (Generally depicted in Fig 2a, defined by each of 1a, 1b, and 2b); an air mover (6, 17a) coupled to the chassis to induce a flow of air along a flow path within the chassis; a first electronics compartment (Adjacent 1b, that which 2a resides) positioned in the chassis and in the air flow path; a first air-to-fluid heat exchanger (1b) positioned in the chassis and in the air flow path, wherein the first heat exchanger includes at least one internal fluid passage (Pipes, P) configured to carry a working fluid that absorbs heat from in the air flow path; and a heat exchanger (43) positioned external to and spaced apart from the chassis (See Fig 5 which suggests that the heat exchanger (43) is separate and apart from the chassis) and in fluid communication with the first heat exchanger, wherein the external heat exchanger is configured to cool the working fluid (Col 10, Lines 33-54); and a controller (50) operably coupled to the system to control the pressure or temperature of the working fluid supplied to the first heat exchanger.

With respect to claim 7, Miller further teaches a third computer module compartment (Where another of 2a is placed) positioned in the chassis and in the air flow path; and a third heat exchanger (Another of 1b) positioned in the chassis and in the air flow path, wherein the third heat exchanger is positioned at least partially downstream of the second computer module compartment and at least partially upstream of the third computer module compartment (See Fig 2a).

With respect to claims 28, and 32, Miller further teaches a plurality of computer modules (2a) held in the first electronics compartment (See Fig 2a) oriented edgewise with respect to the air flow path.

With respect to claims 12, 29, 39, Miller further teaches that the first computer module/electronics compartment is configured to hold at least a first computer module oriented edgewise with respect to the air flow path toward a first side of the second heat exchanger, and wherein the second computer module/electronics compartment is configured to hold at least a second computer module oriented edgewise with respect to the air flow path from a second side of the second heat exchanger opposite to the first side of the second heat exchanger (See Fig 2a).

With respect to claims 13 and 43, Miller further teaches a first computer module (2a) carried by the first computer module compartment, wherein the first computer module includes at least a first computer processor (Column 8, Lines 28-31, "components"); and a second computer module (Another of 2a) carried by the second computer module compartment, wherein the second computer module includes at least a second computer processor (Column 8, Lines 28-31, "components").

With respect to claim 19, Miller further teaches that the heat exchanger (1b) is a first heat exchanger, and wherein the computer system further comprises: a third computer module compartment (Between respective element 1b) positioned in the air flow path in the chassis; and a third heat exchanger (1b) positioned at least partially between the second and third computer module compartments in the air flow path in the

chassis, the second heat exchanger (1b) including at least one internal fluid passage (Pipes, P) configured to carry the working fluid (Column 10, Lines 59-63).

With respect to claim 33, Miller further teaches that the chassis has an air inlet and an air outlet (See POA Fig 1 above); and further comprises: a first plurality of computer modules (2a) held in the first electronics compartment at least partially in the air flow path; a second electronics compartment (Between respective element 1b) positioned in the air flow path in the chassis and spaced apart from the first electronics compartment; a second plurality of computer modules (2a) held in the second electronics compartment at least partially in the air flow path; and a second air-to-fluid heat exchanger (1b) positioned in the air flow path in the chassis, wherein the second heat exchanger is positioned at least partially downstream of the first electronics compartment at least partially upstream of the second electronics compartment, and wherein the second heat exchanger includes at least one opening (13) through which the air mover moves air to transfer heat from the air to the fluid (Column 9, Lines 13-33, see also POA Fig 2 above).

With respect to claim 36, Miller further teaches that the air mover (17a) is carried by the chassis (See Figs 2a, where the heat exchanger (1b) carries 17a which in turn is carried by the chassis).

With respect to claim 37, Miller further teaches a third electronics compartment (Between respective element 1b) positioned in the air flow path in the chassis and spaced apart from the second electronics compartment; a third plurality of computer modules (2a) held in the third electronics compartment at least partially in the air flow

path; and a third heat exchanger (1b) positioned in the air flow path in the chassis, wherein the third heat exchanger is positioned at least partially downstream of the second electronics compartment and at least partially upstream of the third electronics compartment, and wherein the third heat exchanger includes at least one opening (13) through which the air mover moves air (See Fig 2a).

With respect to claim 38, Miller further teaches that the electronics compartments (That which 2a resides), and the heat exchangers (1b) are arranged vertically with respect to the chassis (See Fig 2a).

With respect to claim 40, Miller further teaches that each of the first plurality of computer modules (2a) is individually carried by the first electronics compartment (Fig 2a), wherein each of the first plurality of computer modules includes at least a first computer processor (Column 8, Lines 28-31 – "components"), wherein each of the second plurality of computer modules (2a) is individually carried by the second electronics compartment (Fig 2a), and wherein each of the second plurality of computer modules includes at least a second computer processor (Column 8, Lines 28-31 – "components").

With respect to claim 57, Miller further teaches a method for dissipating heat generated in a chassis (Generally depicted in Fig 2a), comprising: providing a chassis having an air inlet (See POA Fig 1 above), an air outlet (See POA Fig 1 above) and at least one heat-generating object (2a) therein; placing an air-to-fluid heat exchanger (1b) in the chassis; moving a working fluid through an internal passage (Pipes, P) of the heat exchanger; moving air (Via 6) through the air inlet and through the heat exchanger

to transfer heat from the air to the working fluid; cooling the working fluid in a heat exchanger (43) located outside of and spaced apart from the chassis; controlling the working fluid (Via 50) to maintain the working fluid at least proximate to the phase transition state while flowing through the internal passage (Where 50 can reduce liquid flow such that the working fluid remains proximate to the phase transition state); and moving at least a portion of the cooled air across the heat generating object (2a) to transfer heat to the air (See POA Fig 1 above).

With respect to claim 60, Miller further teaches that the heat generating object is a first computer module, and wherein the method further comprises, after moving the portion of air across the computer module, moving the portion of air past a second heat exchanger (another of 1b) in the chassis to transfer heat from the portion of air (See POA Fig 1 above).

With respect to claim 61, Miller further teaches that controlling the working fluid to maintain the working fluid at least proximate to the phase transition state includes controlling the pressure of the working fluid (Where 50, a pump, controls the working fluid and the pump controls the pressure of the working fluid)

With respect to claims 74-75, 77 Miller further teaches that a control strategy of the controller (50) is controlling the static pressure of the working fluid.

With respect to claim 78, Miller further teaches that controlling the working fluid to maintain the working fluid at least proximate to the phase transition state includes controlling the temperature of the working fluid (Wherein the temperature is controlled

via the pump (50) since the speed of the fluid moving through the loop (47) and Pipes (P) is will dictate the temperature of the fluid).

With respect to claim 79, Miller teaches a method for cooling an electronic component (Within 2a, see Col 8, Line 3) housed in a cabinet, comprising: providing the cabinet (Comprising a first of 1a, and 1b, 2a, and 2b and a second of 1a and 1b, see Fig 2a) with an air inlet (Adjacent the left of the first of 1a and 1b) and an air outlet (Adjacent the right of the second 1a, 1b); locating an air-to-fluid heat exchanger (Pipes P within 1b) within the cabinet; providing a heat exchanger (43) external to and spaced from the cabinet; circulating (Via pump 50) a working fluid through the air-to-fluid heat exchanger (Pipes P in 1b) and the external heat exchanger (43); moving air (Via fan 6) through the air inlet, into the cabinet, across the electronic component and through the air-to-fluid heat exchanger (Pipes P in 1b) to transfer heat from the electronic component to the working fluid; removing heat from the working fluid in the external heat exchanger (43); and controlling the pressure or temperature of the working fluid supplied to the air-to-fluid heat exchanger (Via pump 50).

With respect to claims 80 and 81, Miller further suggests that controlling the working fluid does not cause the temperature of the air-to-fluid heat exchanger to drop below the dew point or to allow condensation to form on the air-to-fluid heat exchanger or on the electronic component (Col 2, Lines 51-58,–wherein Miller clearly contemplates the issue of condensation on the heat exchanger/units and in Col 2, Lines 54-58 seeks to solve the problem in the present invention which would include controlling the working fluid to remain below the dew point).

With respect to claim 82, Miller further teaches that controlling the working fluid includes controlling the static pressure (Via 50) of the working fluid or subcooling the working fluid or increasing the condensing capacity of the external heat exchanger.

With respect to claim 83, Miller further teaches that the external heat exchanger (43) is a fluid-to-fluid heat exchanger and the working fluid is cooled with chilled water (Col 10, Lines 33-54).

With respect to claim 84, Miller further teaches a plurality of electronic components (Within 2a, see Fig 2a which shows multiple housings 2a with electronic components) and a plurality of air-to-fluid heat exchangers (1b).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8-11, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller.

With respect to claims 8 and 9, Miller teaches the limitations of claim 1 as per above but is silent as to the airflow path and arrangement of the heat exchangers/computer module compartments being substantially vertical/arranged vertically one on top of the other. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to re-arrange the heat exchangers

and computer compartments as in Fig 2a (essentially rotate the invention in Fig 2a 90 degrees counter-clockwise) since it has been held that rearranging parts of an invention involves only routine skill in the art, In re Japikse, 86 USPQ 70.

With respect to claim 10, Miller further teaches that the first computer module compartment (Between respective 1b) is configured to hold at least a first computer module (2a) oriented edgewise with respect to the air flow path (See Fig 2a).

With respect to claim 11, Miller further teaches that the first computer module compartment (Between respective 1b) is configured to hold a plurality of computer modules (2a) oriented edgewise with respect to the air flow path (See Fig 2a).

With respect to claim 34, Miller teaches the limitations of claim 33 above and further teaches that the air movers move air horizontally through the chassis but is silent as to the vertical configuration of the chassis with the air mover being positioned toward the top of the chassis to move air up through the chassis, however it would have been obvious to one of ordinary skill in the art at the time the invention was made to rearrange the chassis 90 degrees such that the heat exchangers 1b are arranged vertically since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70. In the present case one would be motivated to arrange the system in any fashion (including vertically) in order for the system to fit the dimensions of a given area.

3. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of Khrustalev et al. (US 2003/0010477 – hereinafter, "Khrustalev").

With respect to claims 22-23, Miller teaches the limitations of claim 3 and further teaches that the working fluid is carried by the internal fluid passages (Pipes, P) of the heat exchangers, but fails to teach that the working fluid is a refrigerant where the first portion of the working fluid is in a liquid state and a second portion of the working fluid is in a gaseous state in the heat exchangers. Khrustalev teaches a working fluid which is a refrigerant [0039] wherein a first portion of the working fluid is in a liquid state and a second portion of the working fluid is in a gaseous state (The working fluid will be both in a liquid and gaseous state in the heat exchanger since the heat from the board (9) is causing the fluid to change phases). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Khrustalev with that of Miller to provide an alternate equivalent medium for removing heat from the air. In the event that one of the pipes (P) were to break, a refrigerant will evaporate rather than spill onto the components and cause damage.

4. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of Khrustalev and further in view of Iizuka et al. (US 6,258,293 – hereinafter, "Iizuka").

With respect to claim 24, Miller in view of Khrustalev teaches the limitations of claim 23 above but is silent as to the working fluid has a boiling point in the first heat

exchanger between about 50F and about 65F. Iizuka teaches the conventionality of using a refrigerant having a boiling point between 50 and 65F (Column 11, Lines 10-11). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Iizuka with that of Miller to provide adequate heat transfer capabilities.

5. Claims 4, 27, 42 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of Salt (US 5,603,375).

With respect to claims 4, 27, and 42, Miller teaches the limitations of claims 1 and 26 above but is silent as to the working fluid has a boiling point in the first heat exchanger between about 45F and about 75F. Salt teaches utilizing a working fluid which has a boiling point in a heat exchanger of between about 45F and 75F (Column 2, Lines 1-5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Salt with that of Miller to provide adequate heat transfer capabilities.

With respect to claim 58, Miller in view of James teaches the limitations of claim 57 as per above, however James is silent as to the working fluid having a boiling point between about 45 and 75F. Salt teaches utilizing a working fluid which has a boiling point in a heat exchanger of between about 45F and 75F (Column 2, Lines 1-5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Salt with that of Miller to provide adequate heat transfer capabilities.

6. Claims 31, 51, 72-73, 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of James et al. (US 4,756,164, hereinafter, "James").

With respect to claim 31, Miller teaches all the limitations of claim 26 as per above, however Miller fails to teach a controller which maintains the working fluid in phase transition with the first heat exchanger as claimed. However, James teaches the conventionality of using a conventional refrigeration loop system which has a controller (That which controls the inlet valve (27a), expansion valve (26), and compressor (23)) such that it maintains the working fluid in a phase transition within the first heat exchanger (Col 7, Lines 9-14). Therefore It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of James as per above with that of Miller with the benefit being that James only uses a single refrigeration circuit (Col 3, Lines 5-9). Using a single refrigeration circuit reduces parts and maintenance. Additionally, the Examiner notes that both the system of Miller (where cooling is tapped from a main refrigeration circuit) and James are well known in the art and interchangeable.

With respect to claims 51 and 72, the method steps recited in the claims are inherently necessitated by the device structure as taught by the Miller reference in claim 1 above, further, Miller teaches (In Fig 5) the conventionality of having a heat exchanger (43) which is spaced apart from the chassis (adjacent P). Miller however teaches using a coolant type system to remover heat from the chassis and therefore is silent as to using a refrigerant which boils in the heat exchangers. James teaches a heat

exchanger which has a refrigerant that boils to remove heat from a system (Column 4, Lines 12-16) and controlling the pressure or temperature of the working fluid (Via 23 and 27, 27a) provided to the first and second heat exchangers (Of Miller). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of James with that of Miller to provide an alternate equivalent means of transferring heat from a device. In the event that one of the pipes (P) were to break, a refrigerant will evaporate rather than spill onto the components and cause damage.

With respect to claims 73 and 76, James further teaches controlling the working fluid via static pressure of the working fluid (created by the compressor 23).

7. Claim 52 is rejected under 35 U .S.C. 103(a) as being unpatentable over Miller in view of James and further in view of Salt.

With respect to claim 52, Miller in view of James teaches the limitations of claim 51 as per above, however James is silent as to the working fluid having a boiling point between about 45 and 75F. Salt teaches utilizing a working fluid which has a boiling point in a heat exchanger of between about 45F and 75F (Column 2, Lines 1-5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Salt with that of Miller to provide adequate heat transfer capabilities.

8. Claims 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of James and further in view of Iizuka et al. (US 6,258,293 – hereinafter, "Iizuka").

With respect to claim 53, Miller in view of Jame teaches the limitations of claims 51 and 57 above but is silent as to the working fluid has a boiling point in the first heat exchanger between about 50F and about 65F. Iizuka teaches the conventionality of using a refrigerant having a boiling point between 50 and 65F (Column 11, Lines 10-11). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Iizuka with that of Miller and James to provide adequate heat transfer capabilities.

9. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of Iizuka.

With respect to claim 59, Miller teaches the limitations of claim 57 as per above but is silent as to the working fluid has a boiling point in the first heat exchanger between about 50F and about 65F. Iizuka teaches the conventionality of using a refrigerant having a boiling point between 50 and 65F (Column 11, Lines 10-11). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Iizuka with that of Miller and James to provide adequate heat transfer capabilities.

Response to Arguments

10. The Examiner has reviewed the applications cited in the Dayco/McKesson Disclosure and finds that each does have “similar subject matter”, however the Examiner notes that the filing date of the present application antedates the filing dates of all the applications listed and therefore the subject matter is not relevant to the present invention.

11. Applicant's arguments filed 5/30/2008 have been fully considered but they are not persuasive.

With respect to the Applicants’ remarks to claim 26 that, "this amendment to claim 26 renders that claim patentable for at least the same reasons that the Examiner considers claim 31 patentable”, the Examiner respectfully disagrees. The Examiner notes that by the Applicant’s own admission, the limitations added to claim 26 are more broad than that which was recited in claim 31 (See Page 17 of the present remarks). The present limitations in claim 26 are sufficiently broad so as to not be allowable as per the rejection to claim 26 above.

Independent claims 1, 51, 57, 72 and their respective dependents are not patentable for at least the reasons indicated above in regards to claim 26.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary M. Pape whose telephone number is 571-272-2201. The examiner can normally be reached on Mon.- Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayprakash Gandhi can be reached on 571-272-3740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Z. M. P./
Examiner, Art Unit 2835

/Jayprakash N Gandhi/

Supervisory Patent Examiner, Art Unit 2835